Annexure I
Format I- Part I

Format for information to SQM for Inspection of PMGSY Work

PART I– Work Information *(To be filled-up by PIU)*

Work is | **Ongoing** | **Completed**

GENERAL:

1.1. Date of Inspection: 29 | 12 | 2018

1.2. Name of State Quality Monitor:

1.3. District: BIHAR Block: Ghoghardiha

1.4. Name of Road: From TO4 Khopa to Mahuliya Bhaya Bel Mau

1.5. Package No.: BR-21R-268

1.6. Length: ....Km Flexible Pavement, 3.296 .....Km. CC/other Pavement 1450 m. Total 4.746 Km

1.7. Estimated Cost (As cleared by GOI): Rs. 279.24 Lakh

1.8. Technical Sanction Cost: Rs. 279.24 Lakh

1.9. The Work is a Case of: New connectivity | Up gradation

1.10. Terrain: Plain | Rolling | Hilly

1.11. Date of Start of the Work: 15 | 12 | 17

1.12. Stipulated Date of Completion:

1.13. Actual Date of Completion (if work completed): In Progress

2. PHYSICAL PROGRESS: ***(In case of On going works only)*** Construction Programme and Physical Progress:

Item	Completed percentage of Item	Dates for completion	Start Date	Completion Date	Delay in Months
Earth Work	100%	Due			
		Actual			
CD Works	100%	Due			
		Actual			
Sub base i/c Shoulders	100%	Due			
		Actual			
Base Course (Non Bitu.)	100%	Due			
		Actual			
Base /Wearing Course(Bitu.)		Due			
		Actual			
CC Pavement	-	Due			
		Actual			
Signage etc	-	Due			
		Actual			

3. QUALITY CONTROL:

3.1. Location of Field Laboratory:

3.2. Quality Control Register Part-I is maintained by: Contractor

3.3. Quality Control Register Part-II is maintained by: PIU

4. INSPECTIONS BY NQM, SQM or SENIOR OFFICERS AND ACTION TAKEN:

Inspection by NQMs, SQMs and senior (i.e. SE or CE) departmental officers and action taken statement:

Date of Visit	Inspected By	Observations	Action Taken by PIU with Date
21-Sep 2018	Bijay Kumar Kol	'S'	

29-12-18

Name and Signature of the Head of PIU, Date:.....

Format 1- Part II

Report of State Quality Monitor (SQM)

PART II– Observations of SQM for Ongoing/Completed Work

(To be filled-up by SQM, use additional sheets, if required.)

Stage of Work: | I | II | III |

1. SETTING OUT AND WORKING DRAWING: For all stages of work

#	Whether Bench marks @ 4 per km established (Y/N)	Exact Locations of the Bench Marks	Whether Center Line of Carriage Way accurately established and referenced with Marker Pegs and Chainage Boards (Y/N)	Whether properly prepared Working Drawing for the work under progress is available (Y/N)
	Y	CH-250 CH-500	Y	Y

Grading: Grade: | S | SRI | U | If this item is graded SRI/U, write clear reasons and suggestions for improvement:

'S'

2. SITE CLEARANCE AND GRUBBING: For Stage I of Work

#	Whether Clearing and Grubbing being done as per DPR and Material obtained is being disposed off properly (Y/N)	Whether the material available from scarifying existing work or clearing operations can be salvaged and reused (Y/N)	Name the reusable material obtainable from clearance or scarification and indicate approximate quantity and its re-use by the PIU.
	Y	Y	.

Grading: Grade: | S | SRI | U | If this item is graded SRI/U, write clear reasons and suggestions for improvement:

'S'

3. **QUALITY ARRANGEMENTS AND ATTENTION TO QUALITY - <u>For all stages of work</u>**

Observations about Field Laboratory:

#	Whether Field laboratory Established **(Y/N)**	List the equipments available.	Whether adequate Equipments as per requirement of work are available and are being used. **(Y/N)**
	Y	(i) Sieve analysis (ii) Core cutter (iii) Sand replacement	Y

Observations about Mandatory Tests - Detail out the quantities of various items of works and list the tests required. (Refer to abstract of QC Register Part-I)

#	**Item of Work Executed**	**Quantity**	**Name of Test**	**No. of Tests required**	**No. of Tests Conducted by PIU/Contractor**
	All Mandatory test found maintained				

#	Based on executed quantities whether all mandatory tests conducted.	Whether QC Register Part I maintained as per provisions.	Whether QC Register Part II maintained and test results monitored as per provisions.
	Yes ✓ / Partly / No	Yes ✓ / Partly / No	Yes ✓ / Partly / No

Grading: Grade: S / SRI / U If this item is graded SRI/U, write clear reasons and suggestions for improvement:

S

4. **GEOMETRICS:** The SQM should take at-least two measurements in 1 Km length and if it is found that the roadway and carriageway is inadequate SQM may take more observations:

Observations –Road way width, Carriage way and Camber.

Ref. RD	Roadway Width (m)	Carriage way Width (m)	Camber in %	Ref. RD	Roadway Width (m)	Carriage way Width (m)	Camber in %
100	6.00	3.75	3%	3000	6.00	3.75	3.2%
500	6.00	3.75	3.2%	4.00	6.00	3.75	3%
1200	6.00	3.75	3%				

Observations – Super-elevation and Extra Widening at curves.

Ref. RD	Super Elevation	Extra Widening provided (Y/N)	Ref. RD	Super Elevation	Extra Widening provided (Y/N)

Grade: | **S** | **U** | If this item is graded U, write clear reasons and suggestions for improvement:

'S'

OBSERVATIONS REGARDING THE QUALITY OF ITEMS OF WORK:

5. Earthwork:

Observations –Quality of Material for Embankment/ Sub-grade:

#	Location (RD)	On Visual Classification identify the Group Symbol and write	Quality of material is acceptable. (Y/N)
	100	Sandy clay	Y
	500	- d -	Y
	1200	- d -	Y
		- d -	Y

Grade: | S | | U | If this item is graded U, write clear reasons and suggestions for improvement:

'S'

Observation –Workmanship for Embankment and Sub-grade Construction:

#	Location (RD)	MDD kN/m^3 (As per record)	Field Moisture Content	Degree of Compaction		
				Field Density kN/m^3	Dry Density kN/m^3	Compaction adequate. (Y/N)
		Test	not conduct			

Grade: | S | | U | If this item is graded U, write clear reasons and suggestions for improvement:

—

Observation – Side slopes and profile:

#	Location (RD)	Whether Side Slopes Satisfactory (Y/N)	Whether profile is Satisfactory (Y/N)
		work is in progress	

Observations - Earth work in Hilly/Rolling terrain or high Embankments:

#	Location (RD)	Cut Slopes & Profile, whether appears to be stable. (Y/N)	Adequate slope protection works executed. (Y/N)	Formation is properly dressed and traffic worthy. (Y/N)
		N. A		

Observations – Longitudinal Gradient in case of road in hilly/rolling terrain:

Ref. Between RD…& RD…	Longitudinal Gradient	S/U	Ref. Between RD…& RD…	Longitudinal Gradient	S/U
	N. A				

Grade: S | U If this item is graded U, write clear reasons and suggestions for improvement:

—

6. Sub-Base:

Observations - Quality of Material and Workmanship:

#	Location (RD)	Confirms to Grading. (Y/N)	Suitable from plasticity angle. (Y/N)	Whether compaction is adequate. (Y/N)	Observed Thickness of Layer (in mm)	Prescribed Thickness provided (Y/N)
	100	Y	Y	N	200	Y
	500	Y	Y	Y	200	Y
	1200	Y	N	Y	200	Y
	3000	Y	Y	Y	200	Y

Grade: | S | U | If this item is graded U, write clear reasons and suggestions for improvement:

'S'

7. Base Course:

Observations- Quality of Material and Workmanship of WBM:

#	Location (RD)	Thickness of each layer of WBM (mm)	Thickness is adequate. (Y/N)	Aggregate confirms to Grading (Y/N)	Filler material is non-plastic to desired extent. (Y/N)	Volume of filler material percent of course aggregate	Whether adequate compaction is done. (Y/N)
	100	75mm	Y	Y	Y		Y
	500	75mm	Y	Y	Y		Y
	1200	79mm	Y	Y	Y		Y
	300	75mm	Y	Y	Y		Y

Observations - Surface evenness: Surface evenness in about 200 m critical representative length of completed WBM:

—

Grade: | S | U | If this item is graded U, write clear reasons and suggestions for improvement:

'S'

8. Bituminous Course: Premix Carpet/Surface Dressing/ BM/ MPM etc including Seal Coat: Observations - Quality of Material and Workmanship of BT Layer (*in case of ongoing works)*:

Observations about level of cleanliness of WBM surface prior to application of bituminous layer. (if work is ongoing observe the surface. If BT layer laid, assess by carefully removing the BT layer.):

—

Observations about Quality of Prime Coat and Tack Coat with respect to quality of material and workmanship - Visual Observation - if work is ongoing:

—

In case of PMC/BM/MPM/ Seal Coat

#	Location (RD)	Whether Course Aggregate confirms to grading. (Y/N)	Whether the binder is of approved grade. (Y/N)	Write Mixing Temperature and whether it is in permissible limits. (Y/N)	Write Laying Temperature and whether it is in permissible limits. (Y/N)

Grade: S U If this item is graded U, write clear reasons and suggestions for improvement:

Observations - Workmanship of BT layer PMC/BM/MPM (*in case of completed works):*

#	Location (RD)	Thickness		Whether surface evenness is within acceptable limits. (Y/N)
		Thickness in mm	Whether thickness is adequate. (Y/N)	

Grade: S U If this item is graded U, write clear reasons and suggestions for improvement:

9. Observations - Quality of Shoulders:

#	RD of observation	Thickness of layer in mm	Whether quality of the material is acceptable. (Y/N)	Whether quality of compaction workmanship is acceptable.(Y/N)	Whether Shoulders being constructed simultaneously with sub-base and base course (Y/N)
	100		Y	Y	Y
	500		Y	Y	Y
	1200		Y	Y	Y
	3000		Y	Y	Y

10. Cross Drainage Works: Observations - Quality of CDs:

#	RD at which CD is located	Type of CD	Whether quality of the material is acceptable. (Y/N)	Whether quality of workmanship is acceptable. (Y/N)
	3005	H.P	Y	N
	3310	H.P	N	N
	3720	H.P	N	N
	3842	H.P	Y	N
	4605	H.P	Y	Y

Grade: S SRI U If this item is graded SRI/U, write clear reasons and suggestions for improvement:

'S'

11. Side Drains and Catch water Drains: Observations:

#	Reference of RDs where side drain constructed.	RD at which observation made.	Whether general quality of the side drains/ catch-water drains is acceptable. (Y/N)	Whether side drains are integrated to cross drains. (Y/N)

Grade: S SRI U If this item is graded SRI/U, write clear reasons and suggestions for improvement:

12. CC/ Semi-Rigid (SR) Pavements and Associated Pucca Side Drains:

#	Reference of RDs, CC/SR Pavements provided.	RD at which observation made.	Thickness		General quality of material is acceptable. (Y/N)	General quality of workmanship acceptable(Y/N)
			Thickness in mm	Acceptable (Y/N)		

Comments about adequacy of face/main walls, wings and retaining walls:

Grade: S | U If this item is graded U, write clear reasons and suggestions for improvement:

Not executed

13. Road Furniture and Markings

Observations - Item No. 14 a: Quality Road Furniture and Markings:

Main Informatory Board Fixed: ~~Yes~~ | No

Citizen Information Board Fixed: ~~Yes~~ | No

Grade: **S** | **U** If this item is graded U, write clear reasons and suggestions for improvement:

'S'

Observations - Quality Road Furniture and Markings:

13.1.1. Logo Boards Fixed: ~~Yes~~ | No

13.1.2. 200m. Stones fixed: ~~Yes~~ | No

13.1.3. 1 Km. Stone fixed: ~~Yes~~ | No

13.1.4. Guard Stones fixed on Curves: Yes | No

13.1.5. Mandatory and Cautionary Signage Yes | No

Work in Progress

Grade: **S** | **U** If this item is graded U, write clear reasons and suggestions for improvement:

S

14. General Observations of SQM, (including the observations made during the interaction with PIU staff and Contractor's/ Consultant's Engineers):

14.1. Observations about deficiency in project preparation (Give detailed observations about deficiencies in general and items which have been left but are required as per site conditions):

14.2. Whether the work has been completed/is in progress as per work programme or the delay has occurred. If delay has occurred, whether the liquidated damages have been withhold or recovered:

14.3. Whether the work has been completed within the sanctioned cost, if not, what is the action taken by the PIU (***in case of complete works***):

14.4. Observations about the action taken by the PIU on the observations of inspecting officers including SQMs and NQMs. (Clearly offer comments about the action taken on the observations of Departmental Officers, State Quality Monitors and National Quality Monitors).

14.5. Comments about difference in observations made by NQMs/SQMs in earlier inspections (the NQM shall study the earlier inspection reports of NQMs / SQMs, if any and offer his clear comments about the differences in observations, if any).

15. Other observations, if any:

16. **Quality Grading of items and sub-items of work:** The grading of every sub-item and item of work is given below.

#	Sub Item for Observation	Stage of Work	Awardable Grades	Awarded Grades
1	2	3	4	5
Item 1 – Setting Out and Working Drawing				
a	Bench Mark and Centre Line	All Stages	S/SRI/U	S
b	Availability of Working Drawing	All Stages	S/SRI/U	S
		Item Grade	S/SRI/U	S
Item 2 – Site Clearance and Grubbing				
a	Site Clearance and Grubbing	Stage-I	S/SRI/U	S
b	Re-use of Salvageable Material	Stage-I	S/SRI/U	S
		Item Grade	S/SRI/U	S
Item 3 - Quality Arrangements				
a	Quality Arrangements	All Stages	S/SRI/U	S
b	Number of Mandatory Tests as per prescribed frequency	All Stages	S/SRI/U	S
c	Maintenance of QC Registers	All Stages	S/SRI/U	S
		Item Grade	S/SRI/U	S
Item 4 – Geometrics				
a	Road way width	2 per Km in every inspection	S/U	S
b	Carriageway width	2 per Km in every inspection	S/U	S
c	Camber	2 per km	S/U	S
d	Super-elevation & Extra Widening at Curves	1 curve in each km	S/U	S
		Item Grade	S/U	S
Item 5A - Earth Work and Sub-grade in Embankment/ Cutting				
a	Quality of Material for Embankment/ Sub-grade	In Stage-I, 1 per km/ In Stage- II or III, 1 per km	S/U	S
b	Compaction	In Stage-I, 2 per km/ In Stage- II or III, 2 per km	S/U	S
c	Side Slopes and Profile	2 per km in Stage III	S/U	S

Item 5B - Earth Work in Cutting in Hilly/ Rolling Terrain				
a	Stability and Workmanship of Cut Slopes	Stage I and II, at 2 critical locations with maximum height of cutting in each km	S/U	N.A
b	Adequacy of Slope Protection	All Stages - In general	S/U	N.A
c	Upon completion of formation cutting, dressing, traffic worthiness	At Stage III, at 2 critical locations with maximum height of cutting in each km	S/U	N.A
d	Longitudinal Gradient	Stage II/III - 1 critical and fairly representative stretch of 200m in each Km	S/U	N.A
		Item Grade	S/U	N.A
Item 6 - Sub-Base				
	Quality of Material			
a	Grain Size	In Stage- II or III, 1 per km	S/U	S
b	Plasticity		S/U	S
c	Compaction	In Stage- II or III, 1 per km	S/U	S
d	Total Thickness of Layer	2 per Km	S/U	S
		Item Grade	S/U	S
Item 7 - Base Course – Water Bound Macadam				
a	Grain Size of Course Aggregate	In Stage- II or III, 1 per km	S/U	S
b	Test for Liquid Limit and Plasticity Index in case fine aggregates are crushable type		S/U	S
c	Volumetric Analysis for assessment of compaction of WBM	In Stage- II or III, 1 per km	S/U	.
d	Surface Evenness using straight edge	In completed WBM 2 tests per km	S/U	.
e	Thickness of every layer of WBM.	2 per Km	S/U	S
		Item Grade	S/U	S

Item 8 - Bituminous Layer – Premix Carpet (PMC)/ Surface Dressing (SD)				
a	Level of cleanliness of WBM surface prior to application of bituminous layer	1 per Km	S/U	—
b	Quality of Prime Coat/ Tack Coat with respect to quality of material and workmanship	1 observation on the day of inspection	S/U	—
c	Gradation Test for Course Aggregate (if the work in the item is ongoing)/visual observation in case of completed item of work	1 test on the day of inspection	S/U	—
d	Grade of bitumen and temperature at the time of mixing and laying (if the work in the item is ongoing)	1 test on the day of inspection	S/U	—
e	Bitumen Extraction Test if PMC is complete	1 test per Km	S/U	—
f	Thickness of layer	2 per Km	S/U	S
g	Surface Evenness in case of completed BT work	2 per Km	S/U	—
		Item Grade	S/U	S
Item 9 – Shoulders				
a	Quality of material for shoulders	In Stage- II or III, 1 test per Km	S/SRI/U	S
b	Degree of compaction	In Stage- II or III, 1 test per Km	S/SRI/U	S
c	Thickness of layer	In Stage- II or III, 2 tests per km	S/SRI/U	S
Item Grade			S/SRI/U	S
Item 10 - Cross Drainage Works – Causeways of all spans and Culverts upto 6 m. span.				
a	Quality of Material – Concrete, Stone/ brick masonry, Hume pipes including size etc.	All Stages	S/SRI/U	—
b	Quality of Workmanship such as positioning of pipes, wing walls, cushion over H Pipes etc.	All Stages	S/SRI/U	S
		Item Grade	S/SRI/U	S

Item 11 - Side Drain and Catch Water Drain				
a	General quality of Side Drains/ Catch Water Drains and their integration with CDs.	All Stages	S/SRI/U	—
		Item Grade	S/SRI/U	—
Item 12 - CC/ Semi Rigid Pavements and Associated Pukka Drains				
a	Quality of Material – Concrete, Stone/ Concrete Block Pavement etc.	In Stage- II or III, 1 per 100 m. Length of Pavement	S/U	N.A
b	Strength of CC in Concrete Pavement/ Concrete Block Pavement	In Stage- II or III,1 per 100 m. Length of Pavement	S/U	N.A
c	Quality of Workmanship – Wearing surface texture, Adequacy of setting of concrete, Joints, Edges etc.	In Stage- II or III	S/U	N.A
d	Thickness of Layer	In Stage- II or III, 1 per 100 m. Length of Pavement	S/U	—
		Item Grade	S/U	—
Item 13 - Road Furniture and Markings				
a	Citizen Information Board, Main Informatory Board, Quality and whether fixed during construction.	Stage-I	S/U	S
b	Logo boards, 200 m stones and Km stones, quality and whether fixed after completion.	Stage-III	S/U	—
c	Whether the information in boards is given in local language.	Stage-I and III	S/U	S
		Item Grade	S/U	S

17. **Overall Grading of Work:** The overall grading calculated on the basis of item and sub-item wise grading is given below:

Item No.	Sub Item for Observation	Awarded Grade
Item No 1	Setting Out and Working Drawing	S
Item No 2	Site Clearance and Grubbing	S
Item No 3	Quality Arrangements	S
Item No 4	Geometrics	S
Item No 5 A	Earth Work and Sub-grade in Embankment/ Cutting	S
Item No 5 B	Earth Work in Cutting in Hilly/ Rolling Terrain	-
Item No 6	Sub-Base	S
Item No 7	Base Course – Water Bound Macadam	S
Item No 8	Bituminous Layer – Premix Carpet (PMC)/ Surface Dressing (SD)	-
Item No 9	Shoulders	S
Item No 10	Cross Drainage Works – Causeways of all spans and Culverts upto 6 m. span.	S
Item No 11	Side Drain and Catch Water Drain	N.A
Item No 12	CC/ Semi Rigid Pavements and Associated Pukka Drains	N.A
Item No 13	Road Furniture and Markings	S
Overall Grading		S

Signature:

Name:

Date: 29.12.18

Executive Engineer
R.W.D. Works Division
Biroul, (Darbhanga)